

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: Choulika, Andre  
Perrin, Arnaud  
Dujon, Bernard  
Nicolas, Jean-Francois
- (ii) TITLE OF INVENTION: Nucleotide Sequence Encoding the Enzyme  
I-SCEI and the Uses Thereof
- (iii) NUMBER OF SEQUENCES: 52
- (iv) CORRESPONDENCE ADDRESS:  
(A) ADDRESSEE: Finnegan, Henderson, Farabow, Garrett &  
Dunner  
(B) STREET: 1300 I Street, N.W.  
(C) CITY: Washington  
(D) STATE: D.C.  
(E) COUNTRY: USA  
(F) ZIP: 20005-3315
- (v) COMPUTER READABLE FORM:  
(A) MEDIUM TYPE: Floppy disk  
(B) COMPUTER: IBM PC compatible  
(C) OPERATING SYSTEM: PC-DOS/MS-DOS  
(D) SOFTWARE: PatentIn Release #1.0, Version #1.25
- (vi) CURRENT APPLICATION DATA:  
(A) APPLICATION NUMBER: Unassigned  
(B) FILING DATE: 25-JAN-2000  
(C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA:  
(A) APPLICATION NUMBER: US 09/244,130  
(B) FILING DATE: 04-FEB-1999
- (vii) PRIOR APPLICATION DATA:  
(A) APPLICATION NUMBER: US 09/119,024  
(B) FILING DATE: 20-JUL-1998
- (vii) PRIOR APPLICATION DATA:  
(A) APPLICATION NUMBER: US 08/336,241  
(B) FILING DATE: 07-NOV-1994
- (vii) PRIOR APPLICATION DATA:  
(A) APPLICATION NUMBER: US 07/971,160  
(B) FILING DATE: 05-NOV-1992
- (vii) PRIOR APPLICATION DATA:  
(A) APPLICATION NUMBER: US 07/879,689  
(B) FILING DATE: 05-MAY-1992
- (viii) ATTORNEY/AGENT INFORMATION:  
(A) NAME: Meyers, Kenneth J.  
(B) REGISTRATION NUMBER: 25,146  
(C) REFERENCE/DOCKET NUMBER: 3495-0111-11

00492697 012700

(ix) TELECOMMUNICATION INFORMATION:  
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(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 714 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

ATGCATATGA AAAACATCAA AAAAAACCAG GTAATGAACC TCGGTCCGAA CTCTAAACTG 60  
CTGAAAGAAT ACAAATCCCA GCTGATCGAA CTGAACATCG AACAGTTCGA AGCAGGTATC 120  
GGTCTGATCC TGGGTGATGC TTACATCCGT TCTCGTGATG AAGGTAAAAC CTACTGTATG 180  
CAGTTCGAGT GGAAAAACAA AGCATACATG GACCACGTAT GTCTGCTGTA CGATCAGTGG 240  
GTACTGTCCC CGCCGCACAA AAAAGAACGT GTTAACCACC TGGGTAACCT GGTAATCACC 300  
TGGGGCGCCC AGACTTTCAA ACACCAAGCT TTCAACAAAC TGGCTAACCT GTTCATCGTT 360  
AACAACAAAA AAACCATCCC GAACAACCTG GTTGAAAAC ACCTGACCCC GATGTCTCTG 420  
GCATACTGGT TCATGGATGA TGGTGGTAAA TGGGATTACA ACAAAAACTC TACCAACAAA 480  
TCGATCGTAC TGAACACCCA GTCTTTCACT TTCGAAGAAG TAGAATACCT GGTTAAGGGT 540  
CTGCGTAACA AATTCCAAC TGAACGTTAC GTAAAAATCA ACAAAAAACAA ACCGATCATC 600  
TACATCGATT CTATGTCTTA CCTGATCTTC TACAACCTGA TCAAACCGTA CCTGATCCCCG 660  
CAGATGATGT ACAAACCTGCC GAACACTATC TCCTCCGAAA CTTTCCTGAA ATAA 714

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 237 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Met His Met Lys Asn Ile Lys Lys Asn Gln Val Met Asn Leu Gly Pro  
1 5 10 15  
Asn Ser Lys Leu Leu Lys Glu Tyr Lys Ser Gln Leu Ile Glu Leu Asn



ATTGTATGCA ATTTGAGTGG AAAAATAAGG CATACATGGA TCATGTATGT TTATTATATG 240  
 ATCAATGGGT ATTATCACCT CCTCATAAAA AAGAAAGAGT TAATCATTTA GGTAATTTAG 300  
 TAATTACCTG GGGAGCTCAA ACTTTTAAAC ATCAAGCTTT TAATAAATTA GCTAACTTAT 360  
 TTATTGTAAA TAATAAAAAA CTTATTCCTA ATAATTTAGT TGAAAATTAT TTAACACCTA 420  
 TGAGTCTGGC ATATTGGTTT ATGGATGATG GAGGTAAATG GGATTATAAT AAAAATTCTC 480  
 TTAATAAAAG TATTGTATTA AATACACAAA GTTTTACTTT TGAAGAAGTA GAATATTTAC 540  
 TTAAAGGTTT AAGAAATAAA TTTCAATTAA ATTGTTATGT TAAAATTAAT AAAAATAAAC 600  
 CAATTATTTA TATTGATTCT ATGAGTTATC TGATTTTTTA TAATTTAATT AAACCTTATT 660  
 TAATTCCTCA AATGATGTAT AACTGCCTA ATACTATTC ATCCGAAACT TTTTAAAAT 720  
 AA 722

(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 235 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Met	Lys	Asn	Ile	Lys	Lys	Asn	Gln	Val	Met	Asn	Leu	Gly	Pro	Asn	Ser	1	5	10	15
Lys	Leu	Leu	Lys	Glu	Tyr	Lys	Ser	Gln	Leu	Ile	Glu	Leu	Asn	Ile	Glu	20	25	30	
Gln	Phe	Glu	Ala	Gly	Ile	Gly	Leu	Ile	Leu	Gly	Asp	Ala	Tyr	Ile	Arg	35	40	45	
Ser	Arg	Asp	Glu	Gly	Lys	Thr	Tyr	Cys	Met	Gln	Phe	Glu	Trp	Lys	Asn	50	55	60	
Lys	Ala	Tyr	Met	Asp	His	Val	Cys	Leu	Leu	Tyr	Asp	Gln	Trp	Val	Leu	65	70	75	80
Ser	Pro	Pro	His	Lys	Lys	Glu	Arg	Val	Asn	His	Leu	Gly	Asn	Leu	Val	85	90	95	
Ile	Thr	Trp	Gly	Ala	Gln	Thr	Phe	Lys	His	Gln	Ala	Phe	Asn	Lys	Leu	100	105	110	
Ala	Asn	Leu	Phe	Ile	Val	Asn	Asn	Lys	Lys	Leu	Ile	Pro	Asn	Asn	Leu	115	120	125	
Val	Glu	Asn	Tyr	Leu	Thr	Pro	Met	Ser	Leu	Ala	Tyr	Trp	Phe	Met	Asp	130	135	140	

002270-02700

Asp	Gly	Gly	Lys	Trp	Asp	Tyr	Asn	Lys	Asn	Ser	Leu	Asn	Lys	Ser	Ile
145					150					155					160
Val	Leu	Asn	Thr	Gln	Ser	Phe	Thr	Phe	Glu	Glu	Val	Cys	Tyr	Leu	Val
				165					170					175	
Lys	Gly	Leu	Arg	Asn	Lys	Phe	Gln	Leu	Asn	Cys	Tyr	Val	Lys	Ile	Asn
			180					185					190		
Lys	Asn	Lys	Pro	Ile	Ile	Tyr	Ile	Asp	Ser	Met	Ser	Tyr	Leu	Ile	Phe
		195					200					205			
Tyr	Asn	Ile	Ile	Lys	Pro	Tyr	Leu	Ile	Pro	Gln	Met	Met	Tyr	Lys	Leu
	210					215					220				
Pro	Asn	Thr	Ile	Ser	Ser	Glu	Thr	Phe	Leu	Lys					
225					230					235					

(2) INFORMATION FOR SEQ ID NO:5:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 754 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

CCGGATCCAT GCATATGAAA AACATCAAAA AAAACCAGGT AATGAACCTG GGTCCGAACT	60
CTAAACTGCT GAAAGAATAC AAATCCCAGC TGATCGAACT GAACATCGAA CAGTTCGAAG	120
CAGGTATCGG TCTGATCCTG GGTGATGCTT ACATCCGTTT TCGTGATGAA GGTAACCTT	180
ACTGTATGCA GTTCGAGTGG AAAACAAAG CATACTGGA CCACGTATGT CTGCTGTACG	240
ATCAGTGGGT ACTGTCCCCG CCGCACAAAA AACAACGTGT TAACCACCTG GGTAACCTGG	300
TAATCACCTG GGGCGCCCAG ACTTTCAAAC ACCAAGCTTT CAACAACTG GCTAACCTGT	360
TCATCGTTAA CAACAAAAAA ACCATCCCGA ACAACCTGGT TGAAACTAC CTGACCCCGA	420
TGTCTCTGGC ATACTGGTTC ATGGATGATG GTGGTAAATG GGATTACAAC AAAAATCTA	480
CCAACAAATC GATCGTACTG AACACCCAGT CTTTCACTTT CGAAGAAGTA GAATACCTGG	540
TTAAGGGTCT GCGTAACAAA TTCCAATGA ACTGTTACGT AAAAATCAAC AAAACAAAC	600
CGATCATCTA CATCGATTCT ATGTCTTACC TGATCTTCTA CAACCTGATC AAACCGTACC	660
TGATCCCGCA GATGATGTAC AACTGCCGA AACTATCTC CTCCGAACT TTCCTGAAAT	720
AATAAGTCGA CTGCAGGATC CCGTAAGTAA GTAA	754

(2) INFORMATION FOR SEQ ID NO:6:

002270-6926460



GCGGACAGGT ATCCGGTAAG CGGCAGGGTC GGAACAGGAG AGCGCACGAG GGAGCTTCCA	60
GGGGGAAACG CCTGGTATCT TTATAGTCCT GTCGGGTTTC GCCACCTCTG ACTTGAGCGT	120
CGATTTTTGT GATGCTCGTC AGGGGGGCGG AGCCTATGGA AAAACGCCAG CAACGCGGCC	180
TTTTTACGGT TCCTGGCCTT TTGCTGGCCT TTTGCTCACA TGTTCTTTCC TGC GTTATCC	240
CCTGATTCTG TGGATAACCG TATTACCGCC TTTGAGTGAG CTGATACCGC TCGCCGACG	300
CGAACGACCG AGCGCAGCGA GTCAGTGAGC GAGGAAGCGG AAGAGCGCCC AATACGCAAA	360
CCGCCTCTCC CCGCGCGTTG GCCGATTCAT TAATGCAGCT GGCACGACAG GTTTCCCGAC	420
TGGAAAGCGG GCAGTGAGCG CAACGCAATT AATGTGAGTT AGCTCACTCA TTAGGCACCC	480
CAGGCTTTAC ACTTTATGCT TCCGGCTCGT ATGTTGTGTG GAATTGTGAG CGGATAACAA	540
TTTCACACAG GAAACAGCTA TGACCATGAT TACGAATTCT CATGTTTGAC AGCTTATCAT	600
CGATAAGCTT TAATGCGGTA GTTTATCACA GTTAAATTGC TAACGCAGTC AGGCACCGTG	660
TATGAAATCT AACAAATGCGC TCATCGTCAT CCTCGGCACC GTCACCCTGG ATGCTGTAGG	720
CATAGGCTTG GTTATGCCGG TACTGCCGGG CCTCTTGCGG GATATCCGCC TGATGCGTGA	780
ACGTGACGGA CGTAACCACC GCGACATGTG TGTGCTGTTT CGCTGGGCAT GCCAGGACAA	840
CTTCTGGTCC GGTAACGTGC TGAGCCCGGC CAAGCTTACT CCCCATCCCC CTGTTGACAA	900
TTAATCATCG GCTCGTATAA TGTGTGGAAT TGTGAGCGGA TAACAATTTT ACACAGGAAA	960
CAGGATCCAT GCATATGAAA AACATCAAAA AAAACCAGGT AATGAACCTG GGTCCGAACT	1020
CTAAACTGCT GAAAGAATAC AAATCCCAGC TGATCGAACT GAACATCGAA CAGTTCGAAG	1080
CAGGTATCGG TCTGATCCTG GGTGATGCTT ACATCCGTTC TCGTGATGAA GGTA AACCT	1140
ACTGTATGCA GTTCGAGTGG AAAACAAAG CATACATGGA CCACGTATGT CTGCTGTACG	1200
ATCAGTGGGT ACTGTCCCCG CCGCACAAAA AAGAACGTGT TAACCACCTG GGTAACCTGG	1260
TAATCACCTG GGGCGCCCAG ACTTTCAAAC ACCAAGCTTT CAACAACTG GCTAACCTGT	1320
TCATCGTTAA CAACAAAAAA ACCATCCCGA ACAACCTGGT TGAAAACTAC CTGACCCCGA	1380
TGTCTCTGGC ATACTGGTTC ATGGATGATG GTGGTAAATG GGATTACAAC AAAA ACTCTA	1440
CCAACAAATC GATCGTACTG AACACCCAGT CTTTCACTTT CGAAGAAGTA GAATACCTGG	1500
TTAAGGGTCT GCGTAACAAA TTCCAACCTG ACTGTTACGT AAAAATCAAC AAAAACAAC	1560
CGATCATCTA CATCGATTCT ATGTCTTACC TGATCTTCTA CAACCTGATC AAACCGTACC	1620
TCATCCCCCA GATGATGTAC AAACTGCCGA AACTATCTC CTCCGAACT TTCCTGAAAT	1680
AATAAGTCGA CCTGCAGCCC AAGCTTGGCA CTGGCCGTCG TTTTACAACG TCGTGA CT	1738

(2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 37 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Met Leu Val Arg Gly Ala Glu Pro Met Glu Lys Arg Gln Gln Arg Gly  
1                   5                   10                   15  
Leu Phe Thr Val Pro Gly Leu Leu Leu Ala Phe Cys Ser His Val Leu  
                  20                   25                   30  
Ser Cys Val Ile Pro  
                  35

(2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 14 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Met Gln Leu Ala Arg Gln Val Ser Arg Leu Glu Ser Gly Gln  
1                   5                   10

(2) INFORMATION FOR SEQ ID NO:12:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 13 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Met Leu Pro Ala Arg Met Leu Cys Gly Ile Val Ser Gly  
1                   5                   10

(2) INFORMATION FOR SEQ ID NO:13:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 9 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

002210-012700

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Met Thr Met Ile Thr Asn Ser His Val  
1 5

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 80 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Met Lys Ser Asn Asn Ala Leu Ile Val Ile Leu Gly Thr Val Thr Leu  
1 5 10 15  
Asp Ala Val Gly Ile Gly Leu Val Met Pro Val Leu Pro Gly Leu Leu  
20 25 30  
Arg Asp Ile Arg Leu Met Arg Glu Arg Asp Gly Arg Asn His Arg Asp  
35 40 45  
Met Cys Val Leu Phe Arg Trp Ala Cys Gln Asp Asn Phe Trp Ser Gly  
50 55 60  
Asn Val Leu Ser Pro Ala Lys Leu Thr Pro His Pro Pro Val Asp Asn  
65 70 75 80

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Met Cys Gly Ile Val Ser Gly  
1 5

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 237 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

00492697-012700

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Met	His	Met	Lys	Asn	Ile	Lys	Lys	Asn	Gln	Val	Met	Asn	Leu	Gly	Pro	1	5	10	15
Asn	Ser	Lys	Leu	Leu	Lys	Glu	Tyr	Lys	Ser	Gln	Leu	Ile	Glu	Leu	Asn	20	25	30	
Ile	Glu	Gln	Phe	Glu	Ala	Gly	Ile	Gly	Leu	Ile	Leu	Gly	Asp	Ala	Tyr	35	40	45	
Ile	Arg	Ser	Arg	Asp	Glu	Gly	Lys	Thr	Tyr	Cys	Met	Gln	Phe	Glu	Trp	50	55	60	
Lys	Asn	Lys	Ala	Tyr	Met	Asp	His	Val	Cys	Leu	Leu	Tyr	Asp	Gln	Trp	65	70	75	
Val	Leu	Ser	Pro	Pro	His	Lys	Lys	Glu	Arg	Val	Asn	His	Leu	Gly	Asn	85	90	95	
Leu	Val	Ile	Thr	Trp	Gly	Ala	Gln	Thr	Phe	Lys	His	Gln	Ala	Phe	Asn	100	105	110	
Lys	Leu	Ala	Asn	Leu	Phe	Ile	Val	Asn	Asn	Lys	Lys	Thr	Ile	Pro	Asn	115	120	125	
Asn	Leu	Val	Glu	Asn	Tyr	Leu	Thr	Pro	Met	Ser	Leu	Ala	Tyr	Trp	Phe	130	135	140	
Met	Asp	Asp	Gly	Gly	Lys	Trp	Asp	Tyr	Asn	Lys	Asn	Ser	Thr	Asn	Lys	145	150	155	
Ser	Ile	Val	Leu	Asn	Thr	Gln	Ser	Phe	Thr	Phe	Glu	Glu	Val	Glu	Tyr	165	170	175	
Leu	Val	Lys	Gly	Leu	Arg	Asn	Lys	Phe	Gln	Leu	Asn	Cys	Tyr	Val	Lys	180	185	190	
Ile	Asn	Lys	Asn	Lys	Pro	Ile	Ile	Tyr	Ile	Asp	Ser	Met	Ser	Tyr	Leu	195	200	205	
Ile	Phe	Tyr	Asn	Leu	Ile	Lys	Pro	Tyr	Leu	Ile	Pro	Gln	Met	Met	Tyr	210	215	220	
Lys	Leu	Pro	Asn	Thr	Ile	Ser	Ser	Glu	Thr	Phe	Leu	Lys	225	230	235				

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 26 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

002270-46926400

**SECRET**

26

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 26 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

26

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 26 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

26

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 26 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

26

(i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 26 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

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(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 base pairs

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

TAACGGTCCT AAGGTAGCGA AATTCA

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

ATTGCCAGGA TTCCATCGCT TTAAGT

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 base pairs

- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

TGACTCTCTT AAGGTAGCCA AATGCC

26

(2) INFORMATION FOR SEQ ID NO:26:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

ACTGAGAGAA TTCCATCGGT TTACGG

26

(2) INFORMATION FOR SEQ ID NO:27:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

CGAGGTTTTG GTAAC TATTT ATTACC

26

(2) INFORMATION FOR SEQ ID NO:28:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

CCTCCAAAAC CATTGATAAA TAATGG

26

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06957 03700

(ii) MOLECULE TYPE: DNA (genomic)

GGGTTCAAAA CGTCGTGAGA CAGTTT

(2) INFORMATION FOR SEQ ID NO:30:

(ii) MOLECULE TYPE: DNA (genomic)

CCCAAGTTTT GCAGCACTCT GTCAAA

26

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 26 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

GATGCTGTAG GCATAGGCTT GGTTAT

26

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 26 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

CTACGACATC CGTATCCGAA CCAATA

26

(2) INFORMATION FOR SEQ ID NO:33:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

CTTTCGCGAA CAGTATAATT TTATAA

26

(2) INFORMATION FOR SEQ ID NO:34:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

GAAAGGCGTT GTCATATTAA AATATT

26

(2) INFORMATION FOR SEQ ID NO:35:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

ACCATGGGGT CAAATGTCTT TCTGGG

26

(2) INFORMATION FOR SEQ ID NO:36:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

0042270-15925450

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

TGGTACCCCA GTTTACAGAA AGACCC

26

(2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

GTGCCTGAAT GATATTTATT ACCTTT

26

(2) INFORMATION FOR SEQ ID NO:38:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 26 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

GTGCCTGAAT GATATTTATT ACCTTT

26

(2) INFORMATION FOR SEQ ID NO:39:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 39 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

CAACGCTCAG TAGATGTTTT CTTGGGTCTA CCGTTTAAT

39

(2) INFORMATION FOR SEQ ID NO:40:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 39 base pairs

0049269-012700

- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

GTTGCGAGTC ATCTACAAAA GAACCCAGAT GGCAAATTA

39

(2) INFORMATION FOR SEQ ID NO:41:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 32 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

CAAGCTTATG AGTATGAAGT GAACACGTTA TT

32

(2) INFORMATION FOR SEQ ID NO:42:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 32 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

GTTCGAATAC TCATACTTCA CTTGTGCAAT AA

32

(2) INFORMATION FOR SEQ ID NO:43:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 38 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

GCTATTCGTT TTTATGTATC TTTTGCGTGT AGCTTTAA

38

004210" 46926460

(2) INFORMATION FOR SEQ ID NO:44:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 38 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

CGATAAGCAA AAATACATAG AAAACGCACA TGGAAATT

38

(2) INFORMATION FOR SEQ ID NO:45:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 80 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

CCAAGCTCGA ATTGCATGC TCTAGAGCTC GGTACCCGGG ATCCTGCAGT CGACGCTAGG

60

GATAACAGGG TAATACAGAT

80

(2) INFORMATION FOR SEQ ID NO:46:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 80 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

GGTTCGAGCT TAAGCGTACG AGATCTCGAG CCATGGGCC TAGGACGTCA GCTGCGATCC

60

CTATTGTCCC ATTATGTCTA

80

(2) INFORMATION FOR SEQ ID NO:47:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 80 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

004969701000

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

ATCAGATCTA AGCTTGCATG CCTGCAGGTC GACTCTAGAG GATCCCCGGG TACCGAGCTC 60  
GAATTCACTG GCCGTCGTTT 80

(2) INFORMATION FOR SEQ ID NO:48:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 80 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

TAGTCTAGAT TCGAACGTAC GGACGTCCAG CTGAGATCTC CTAGGGGCCC ATGGCTCGAG 60  
CTTAAGTGAC CGGCAGCAAA 80

(2) INFORMATION FOR SEQ ID NO:49:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 80 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

TACAACGTCG TGA CTGGGAA AACCTGGCG TTACCCA ACT TAATCGCCTT GCAGCACATC 60  
CCCCTTTCGC CAGCTGGCGT 80

(2) INFORMATION FOR SEQ ID NO:50:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 80 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

0049269 04200

60

80

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 18 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

18

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 18 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

18

SECRET